

0012

C/007/041 Incoming  
Q



P.O. Box 910, East Carbon, Utah 84520  
Telephone (435) 888-4000 Fax (435) 888-4002

Utah Division of Oil, Gas & Mining  
Utah Coal Program  
1594 West North Temple, Suite 1210  
P.O.Box 145801  
Salt Lake City, UT 84114-5801

February 23, 2009

Attn: Daron Haddock  
Permit Supervisor

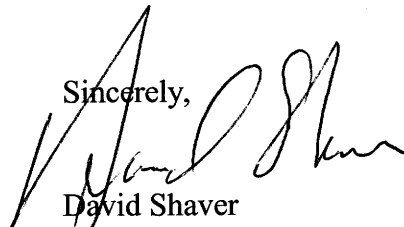
Re: West Ridge Mine C/007/041  
Lab analysis for topsoil  
Task ~~3007~~ 3077

Dear Mr. Haddock:

Attached please find four copies of the lab analysis for the topsoil associated with the Bear Canyon GVH installation. This information is submitted in response to the final stipulations as outlined in Task 3077.

If you have questions or comments please contact me at (435) 888-4017.

Sincerely,



David Shaver  
Resident Agent

cc: Priscilla Burton

RECEIVED

FEB 26 2009

DIV. OF OIL, GAS & MINING

## APPLICATION FOR PERMIT PROCESSING

Permit Change ☐New Permit ☐Renewal ☐Transfer ☐Exploration ☐Bond Release ☐

Permit Number: C/007/041

Title of Proposal: Submittal of GVH topsoil lab analysis, Task 3077

Mine: WEST RIDGE MINE

Permittee: WEST RIDGE Resources, Inc.

Description, include reason for application and timing required to implement:.

Instructions: If you answer yes to any of the first 8 questions (gray), submit the application to the Salt Lake Office. Otherwise, you may submit it to your reclamation specialist.

- ☐ Yes ☒ No 1. Change in the size of the Permit Area? \_\_\_\_\_ acres Disturbed Area? \_\_\_\_\_ acres ☐ increase ☐ decrease.
- ☐ Yes ☒ No 2. Is the application submitted as a result of a Division Order?
- ☐ Yes ☒ No 3. Does application include operations outside a previously identified Cumulative Hydrologic Impact Area?
- ☐ Yes ☒ No 4. Does application include operations in hydrologic basins other than as currently approved?
- ☐ Yes ☒ No 5. Does application result from cancellation, reduction or increase of insurance or reclamation bond?
- ☐ Yes ☒ No 6. Does the application require or include public notice/publication?
- ☐ Yes ☒ No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
- ☐ Yes ☒ No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
- ☐ Yes ☒ No 9. Is the application submitted as a result of a Violation?
- ☐ Yes ☒ No 10. Is the application submitted as a result of other laws or regulations or policies? Explain:
- ☐ Yes ☒ No 11. Does the application affect the surface landowner or change the post mining land use?
- ☐ Yes ☒ No 12. Does the application require or include underground design or mine sequence and timing?
- ☒ Yes ☐ No 13. Does the application require or include collection and reporting of any baseline information?
- ☐ Yes ☒ No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
- ☐ Yes ☒ No 15. Does application require or include soil removal, storage or placement?
- ☐ Yes ☒ No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
- ☐ Yes ☒ No 17. Does the application require or include construction, modification, or removal of surface facilities?
- ☐ Yes ☒ No 18. Does the application require or include water monitoring, sediment or drainage control measures?
- ☐ Yes ☒ No 19. Does the application require or include certified designs, maps, or calculations?
- ☐ Yes ☒ No 20. Does the application require or include subsidence control or monitoring?
- ☐ Yes ☒ No 21. Have reclamation costs for bonding been provided for?
- ☐ Yes ☒ No 22. Does application involve a perennial stream, a stream buffer zone or discharges to a stream?
- ☐ Yes ☒ No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

☐ Attach 3 complete copies of the application.

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein. (R645-301-23)

Signed - Name - Position - Date

Subscribed and sworn to before me this 23<sup>rd</sup> day of February, 2009.

My Commission Expires:  
Attest: STATE OF  
COUNTY OF

Notary Public

Linda Kerns

Utah

04.06.09



Notary Public  
LINDA KERNS  
345 N. 700 E.  
Price, UT 84501  
My Commission Expires  
April, 6, 2009  
State of Utah

Received by Oil, Gas &amp; Mining

RECEIVED

FEB 26 2009

DIV. OF OIL, GAS &amp; MINING

ASSIGNED TRACKING NUMBER

**Title of Application:**

Permit Number:

Permittee: WEST RIDGE RESOURCES

DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED

Any other specific or special instructions required for insertion of this proposal into the Mining and Reclamation Plan?

## DIV. OF OIL, GAS & MINING

# Long Resource Consultants, Inc.

1960 W Deep Creek Road, Morgan, UT 84050-966, Office 801-829-6416, Cell 801-791-3447, Email lrcsoils@msn.com

Mr. Dave Shaver  
Utah American Energy, Inc.  
Westridge Mine  
P.O. Box 1077  
Price, UT 84501

Total Pages: 16

February 12, 2009

Dave,

Attached are the lab results for the Bear Canyon Gas Vent Hole (GVH) site. Lab analysis was completed by Energy Labs in Casper, Wyoming in accordance with the Utah Department of Oil, Gas, and Mining (UDOGM) Guidelines for Management of Topsoil and Overburden (2005), R645-301-200 Soils.

None of the sample analyses had unacceptable levels based on the DOGM Guidelines for Management of Topsoil and Overburden (2005). The following parameters had some sample results in the Fair or Poor categories.

- Saturation Percent – six samples had results in the *Poor* category ranging from 21.6 to 24.7% (DOGM lower limit for Good is 25.0%);
- Lime as  $\text{CaCO}_3$  – thirteen of the nineteen samples had results in the *Fair* category ranging from 15.0 to 19.3 (DOGM *Fair* range is 15-30%);
- Soil pH – five samples had results in the *Fair* category (8.4 to 8.5) and six samples had results in the *Poor* category (8.7 to 9.0).
- Available Water Capacity (AWC) – fifteen of the nineteen samples had calculated available water capacity in the Fair range. This was primarily due to the high percentage of estimated rock fragments in the soil.

The following samples had results for some parameters in either the *Fair* or *Poor* categories.

## BC-GVH-1

- 0 to 12 inches: pH was *Fair* (8.3) and AWC was *Fair* (0.07 in/in). This soil was salvaged for topsoil with the overlying organic horizon.
- 12 to 17 inches: lime as  $\text{CaCO}_3$  was *Fair* (15.0%). This soil was salvaged as topsoil.

- 17 to 34 inches: saturation percent (23.7%) was *Poor*, pH (8.6) was *Poor* lime as  $\text{CaCO}_3$  was *Fair* (18.6%), and AWC was fair (0.06 in/in). Very limited amounts of this material may have been salvaged as topsoil.
- 34 to 44 inches: saturation percent (24.7%) was *Poor*, pH (8.7) was *Poor* lime as  $\text{CaCO}_3$  was *Fair* (18.2%), and AWC was *Fair* (0.07 in/in). This material was not salvaged as topsoil.
- 44 to 56 inches: lime as  $\text{CaCO}_3$  was *Fair* (16.9%) and AWC was *Fair* (0.09 in/in). This material was not salvaged as topsoil.
- 56 to 84 inches: pH (8.3) was *Fair*, lime as  $\text{CaCO}_3$  was *Fair* (18.6%), and AWC was *Fair* (0.07 on/in). This material was not salvaged as topsoil.

#### BC-GVH-2

- 0 to 3 inches: all parameters listed as *Good*. This soil was salvaged as topsoil with overlying organic horizon.
- 3 to 12 inches: lime as  $\text{CaCO}_3$  was *Fair* (17.2%) and AWC was *Fair* (0.06 in/in). This soil was salvaged as topsoil.
- 12 to 20 inches: saturation percent was *Poor* (24.6%), lime as  $\text{CaCO}_3$  was *Fair* (17.4%), pH was *Fair* (8.5), and AWC was *Fair* (0.07 in/in). Limited amounts of this soil were salvaged as topsoil.
- 20 to 38 inches: AWC was *Fair* (0.09 in/in). Limited amounts of this soil may have been salvaged as topsoil.
- 38 to 45 inches: lime as  $\text{CaCO}_3$  was *Fair* (17.6%), pH was *Poor* (8.6), and AWC was *Fair* (0.05 in/in). This material was not salvaged as topsoil.
- 45 to 51 inches: all parameters listed as *Good*. This soil was not salvaged as topsoil due to the poorer quality material overlying this horizon.
- 51 to 72 inches: lime as  $\text{CaCO}_3$  was *Fair* (18.0%), pH was *Fair* (8.4), and AWC was *Fair* (0.06 in/in). This material was not salvaged as topsoil.
- 72 to 84 inches: lime as  $\text{CaCO}_3$  was *Fair* (17.6%), pH was *Poor* (8.8), and AWC was *Fair* (0.07 in/in). This material was not salvaged as topsoil.

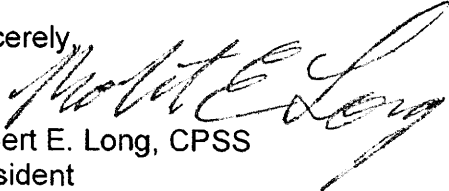
#### BC-GVH-3

- 0 to 4 inches: all parameters listed as *Good*. This soil was salvaged as topsoil with overlying organic horizon.
- 4 to 17 inches: AWC was *Fair* (0.09 in/in). This soil was salvaged as topsoil.

- 17 to 30 inches: lime as CaCO<sub>3</sub> was *Fair* (18.4%), pH was *Poor* (8.6), and AWC was *Fair* (0.06 in/in). Very limited amounts of this material may have been salvaged as topsoil, but the majority was not salvaged as topsoil.
- 30 to 57 inches: saturation percent was *Poor* (21.6%), lime as CaCO<sub>3</sub> was *Fair* (19.3%), pH was *Fair* (8.5), and AWC was *Fair* (0.06 in/in). This material was not salvaged as topsoil.
- 57 to 90 inches: saturation percent was *Poor* (22.7%), lime as CaCO<sub>3</sub> was *Fair* (19.3%), pH was *Poor* (8.6), and AWC was *Fair* (0.05 in/in). This material was not salvaged as topsoil.

Attached with this summary are the original lab analysis results from Energy Labs in Casper, Wyoming and a spreadsheet highlighting the results according to the Utah DOGM guidelines.

Sincerely,

  
Robert E. Long, CPSS  
President

Bear Canyon - Gas Vent Hole (GVH)  
Topsoil Analysis

February 12, 2009

Samples Collected: October 7, 2008  
Analysis Completion Date: December 26, 2008

Project Sample ID	Depth	EC SatPaste	Saturation SatPaste	Lime as CaCO <sub>3</sub>	pH SatPaste	NO <sub>3</sub> Soluble	Ca SatPaste	Mg SatPaste
	inches	mmhos/cm	%	%	s.u.	mg/kg-dry	meq/L	meq/L
BC-GVH-1	0-12	0.59	30.0	14.8	8.3	1.9	4.9	1.0
BC-GVH-1	12-17	0.47	34.3	15.0	8.1	1.3	4.1	0.7
BC-GVH-1	17-34	0.32	23.7	18.6	8.6	<1.0	2.2	0.6
BC-GVH-1	34-44	0.34	24.7	18.2	8.7	<1.0	2.0	0.9
BC-GVH-1	44-56	0.53	32.1	16.9	8.0	1.1	1.9	1.0
BC-GVH-1	56-84	0.37	31.3	15.4	8.3	1.4	2.3	1.5
BC-GVH-2	0-3	1.08	59.9	3.6	7.0	2.4	9.4	2.9
BC-GVH-2	3-12	0.49	29.8	17.2	8.2	<1.0	4.3	0.9
BC-GVH-2	12-20	0.29	24.6	17.4	8.5	<1.0	2.4	0.5
BC-GVH-2	20-38	0.42	27.8	12.4	8.2	1.1	3.4	1.0
BC-GVH-2	38-45	0.25	31.1	17.6	8.6	<1.0	2.0	0.6
BC-GVH-2	45-51	0.32	30.0	5.8	8.2	1.2	2.4	1.0
BC-GVH-2	51-72	0.33	26.4	18.0	8.4	1.1	2.5	1.1
BC-GVH-2	72-84	0.21	22.0	17.8	8.8	<1.0	1.5	0.7
BC-GVH-3	0-4	0.82	38.8	2.2	7.4	1.1	6.8	1.8
BC-GVH-3	4-17	0.22	30.9	7.8	7.8	1.2	1.8	0.4
BC-GVH-3	17-30	0.28	29.3	18.4	8.6	<1.0	2.3	0.4
BC-GVH-3	30-57	0.48	21.6	19.3	8.5	1.2	4.1	0.9
BC-GVH-3	57-90	0.20	22.7	19.3	8.6	<1.0	1.6	0.4

DOGM Suitability

Good	Fair	Poor	Unacceptable
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Bear Canyon - Gas Vent Hole (GVH)

February 12, 2009

Topsoil Analysis

Topsoil Analysis

Samples Collected: October 7, 2008

Analysis Completion Date: December 26, 2008

Project	Depth	K SatPaste	Na SatPaste	SAR	Very Fine Sand	Sand	Silt	Clay
Sample ID	inches	meq/L	meq/L		%	%	%	%
BC-GVH-1	0-12	0.3	0.1	0.08	6	54	28	18
BC-GVH-1	12-17	0.2	0.09	0.06	13	50	24	26
BC-GVH-1	17-34	0.2	0.1	0.12	9	52	30	18
BC-GVH-1	34-44	0.2	0.4	0.34	8	58	20	22
BC-GVH-1	44-56	0.2	0.1	0.11	4	60	20	20
BC-GVH-1	56-84	0.3	0.3	0.21	10	49	27	24
BC-GVH-2	0-3	0.6	0.2	0.06	16	42	36	22
BC-GVH-2	3-12	0.2	0.2	0.10	9	68	14	18
BC-GVH-2	12-20	0.1	0.08	0.07	6	64	20	16
BC-GVH-2	20-38	0.2	0.2	0.10	11	58	22	20
BC-GVH-2	38-45	0.2	0.2	0.14	7	60	22	18
BC-GVH-2	45-51	0.1	0.1	0.08	12	44	30	26
BC-GVH-2	51-72	0.1	0.2	0.14	10	50	26	24
BC-GVH-2	72-84	0.09	0.3	0.31	10	70	14	16
BC-GVH-3	0-4	0.8	0.2	0.07	<1	22	56	22
BC-GVH-3	4-17	0.1	0.2	0.16	4	52	22	26
BC-GVH-3	17-30	0.2	0.2	0.18	7	62	20	18
BC-GVH-3	30-57	0.3	0.1	0.09	5	60	20	20
BC-GVH-3	57-90	0.08	0.2	0.24	4	58	20	22

DOGM Suitability

Good	Fair	Poor	Unacceptable
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Bear Canyon - Gas Vent Hole (GVH)

February 12, 2009

Topsoil Analysis

Topsoil Analysis

Samples Collected: October 7, 2008

Analysis Completion Date: December 26, 2008

Project Sample ID	Depth	Texture	K NH <sub>4</sub> OAc	P Olsen- NAHCO <sub>3</sub>	Organic Matter	Available Water Capacity	K Factor Calculated
	inches		meq/100g	mg/kg-dry	%	inches/inch	
BC-GVH-1	0-12	SL	0.82	14	3.7	0.07	0.12
BC-GVH-1	12-17	SCL	0.54	15	3.3	0.12	0.24
BC-GVH-1	17-34	L	0.35	6	0.9	0.06	0.32
BC-GVH-1	34-44	SCL	0.36	14	1.6	0.07	0.23
BC-GVH-1	44-56	SL SCL	0.40	8	1.9	0.09	0.16
BC-GVH-1	56-84	SCL	0.62	6	2.2	0.07	0.27
BC-GVH-2	0-3	L	0.66	26	8.0	0.13	0.20
BC-GVH-2	3-12	SL	0.22	19	1.4	0.06	0.16
BC-GVH-2	12-20	SL	0.22	15	1.2	0.05	0.19
BC-GVH-2	20-38	SL SCL	0.35	9	1.9	0.09	0.21
BC-GVH-2	38-45	SL	0.26	5	0.6	0.05	0.21
BC-GVH-2	45-51	L	0.45	6	3.2	0.12	0.27
BC-GVH-2	51-72	SCL	0.31	5	1.7	0.06	0.27
BC-GVH-2	72-84	SL	0.21	5	0.6	0.07	0.08
BC-GVH-3	0-4	SiL	1.2	20	5.9	0.16	0.18
BC-GVH-3	4-17	SCL	0.51	13	1.6	0.09	0.21
BC-GVH-3	17-30	SL	0.26	7	0.7	0.06	0.19
BC-GVH-3	30-57	SL SCL	0.23	5	0.3	0.06	0.18
BC-GVH-3	57-90	SCL	0.21	<5	0.5	0.05	0.22

DOGM Suitability

Good	Fair	Poor	Unacceptable
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## ANALYTICAL SUMMARY REPORT

December 26, 2008

Long Resource Consultants Inc  
1960 W Deep Creek Rd  
Morgan, UT 84050

Workorder No.: C08110437 Quote ID: C2967 - Westridge Soil Samples

Project Name: Westridge - Bear Canyon GVH

Energy Laboratories, Inc. received the following 19 samples for Long Resource Consultants Inc on 11/10/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C08110437-001	BC-GVH-1 [0-12]	10/07/08 00:00	11/10/08	Soil	Cations, NH <sub>4</sub> OAc Extractable Cations, Saturated Paste Saturated Paste Electrical Conductivity Metals, NaHCO <sub>3</sub> Extractable Lime as CaCO <sub>3</sub> Nitrate+Nitrite as N, KCL Extract Organic Carbon Saturation Percentage Saturated Paste pH KCL Soil Extract Lime Percentage NaHCO <sub>3</sub> Soil Extract NH <sub>4</sub> AC Soil Extraction Particle Size Analysis / Texture Prep Saturated Paste Total Organic Carbon Prep Particle Size Analysis / Texture Sodium Adsorption Ratio in Soil
C08110437-002	BC-GVH-1 [12-17]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-003	BC-GVH-1 [17-34]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-004	BC-GVH-1 [34-44]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-005	BC-GVH-1 [44-56]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-006	BC-GVH-1 [56-84]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-007	BC-GVH-2 [0-3]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-008	BC-GVH-2 [3-12]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-009	BC-GVH-2 [12-20]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-010	BC-GVH-2 [20-38]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-011	BC-GVH-2 [38-45]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-012	BC-GVH-2 [45-51]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-013	BC-GVH-2 [51-72]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-014	BC-GVH-2 [72-84]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-015	BC-GVH-3 [0-4]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-016	BC-GVH-3 [4-17]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-017	BC-GVH-3 [17-30]	10/07/08 00:00	11/10/08	Soil	Same As Above
C08110437-018	BC-GVH-3 [30-57]	10/07/08 00:00	11/10/08	Soil	Same As Above



## ANALYTICAL SUMMARY REPORT

C08110437-019 BC-GVH-3 [57-90] 10/07/08 00:00 11/10/08 Soil Same As Above

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By:

Stephanie Waldrop



Report Date: 12/26/08  
Date Received: 11/10/08

# LABORATORY ANALYTICAL REPORT

Client: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH  
Workorder: C08110437

Sample ID	Client Sample ID	Analysis		EC SatPst mmhos/cm	Saturation SatPst %	Lime as CaCO3 %	pH SatPst s.u.	NO3 Soluble mg/kg-dry	Ca SatPst meq/L	Mg SatPst meq/L	K SatPst meq/L	Na SatPst meq/L	SAR	Very Fine Sand		Sand		Silt	
		Units	Depth											Results	%	Results	%	Results	%
C08110437-001	BC-GVH-1	0-12		0.59	30.0	14.8	8.3	1.9	4.9	1	0.3	0.1	0.08	6		54		28	
C08110437-002	BC-GVH-1	12-17		0.47	34.3	15.0	8.1	1.3	4.1	0.7	0.2	0.09	0.06	13		50		24	
C08110437-003	BC-GVH-1	17-34		0.32	23.7	18.6	8.6	<1.0	2.2	0.6	0.2	0.1	0.12	9		52		30	
C08110437-004	BC-GVH-1	34-44		0.34	24.7	18.2	8.7	<1.0	2.0	0.9	0.2	0.4	0.34	8		58		20	
C08110437-005	BC-GVH-1	44-56		0.53	32.1	16.9	8.0	1.1	1.9	1.0	0.2	0.1	0.11	4		60		20	
C08110437-006	BC-GVH-1	56-84		0.37	31.3	15.4	8.3	1.4	2.3	1.5	0.3	0.3	0.21	10		49		27	
C08110437-007	BC-GVH-2	0-3		1.08	59.9	3.6	7.0	2.4	9.4	2.9	0.6	0.2	0.06	16		42		36	
C08110437-008	BC-GVH-2	3-12		0.49	29.8	17.2	8.2	<1.0	4.3	0.9	0.2	0.2	0.10	9		68		14	
C08110437-009	BC-GVH-2	12-20		0.29	24.6	17.4	8.5	<1.0	2.4	0.5	0.1	0.08	0.07	6		64		20	
C08110437-010	BC-GVH-2	20-38		0.42	27.8	12.4	8.2	1.1	3.4	1	0.2	0.2	0.10	11		58		22	
C08110437-011	BC-GVH-2	38-45		0.25	31.1	17.6	8.6	<1.0	2.0	0.6	0.2	0.2	0.14	7		60		22	
C08110437-012	BC-GVH-2	45-51		0.32	30.0	5.8	8.2	1.2	2.4	1	0.1	0.1	0.08	12		44		30	
C08110437-013	BC-GVH-2	51-72		0.33	26.4	18.0	8.4	1.1	2.5	1.1	0.1	0.2	0.14	10		50		26	
C08110437-014	BC-GVH-2	72-84		0.21	22.0	17.8	8.8	<1.0	1.5	0.7	0.09	0.3	0.31	10		70		14	
C08110437-015	BC-GVH-3	0-4		0.82	38.8	2.2	7.4	1.1	6.8	1.8	0.8	0.2	0.07	<1		22		56	
C08110437-016	BC-GVH-3	4-17		0.22	30.9	7.8	7.8	1.2	1.8	0.4	0.1	0.2	0.16	4		52		22	
C08110437-017	BC-GVH-3	17-30		0.28	29.3	18.4	8.6	<1.0	2.3	0.4	0.2	0.2	0.18	7		62		20	
C08110437-018	BC-GVH-3	30-57		0.48	21.6	19.3	8.5	1.2	4.1	0.9	0.3	0.1	0.09	5		60		20	
C08110437-019	BC-GVH-3	57-90		0.20	22.7	19.3	8.6	<1.0	1.6	0.4	0.08	0.2	0.24	4		58		20	



Report Date: 12/26/08  
Date Received: 11/10/08

# LABORATORY ANALYTICAL REPORT

Client: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH  
Workorder: C08110437

Sample ID	Client Sample ID	Analysis		Clay	Texture	K		P. Olsen- NAHCO <sub>3</sub>	Organic Matter
		Units	Depth	%	Results	meq/100g	mg/kg-dry		%
C08110437-001	BC-GVH-1	0-12	18	18	SL	0.82	14	3.7	
C08110437-002	BC-GVH-1	12-17	26	26	SCL	0.54	15	3.3	
C08110437-003	BC-GVH-1	17-34	18	18	L	0.35	6	0.9	
C08110437-004	BC-GVH-1	34-44	22	22	SCL	0.36	14	1.6	
C08110437-005	BC-GVH-1	44-56	20	20	SL SCL	0.40	8	1.9	
C08110437-006	BC-GVH-1	56-84	24	24	SCL	0.62	6	2.2	
C08110437-007	BC-GVH-2	0-3	22	22	L	0.66	26	8.0	
C08110437-008	BC-GVH-2	3-12	18	18	SL	0.22	19	1.4	
C08110437-009	BC-GVH-2	12-20	16	16	SL	0.22	15	1.2	
C08110437-010	BC-GVH-2	20-38	20	20	SL SCL	0.35	9	1.9	
C08110437-011	BC-GVH-2	38-45	18	18	SL	0.26	5	0.6	
C08110437-012	BC-GVH-2	45-51	26	26	L	0.45	6	3.2	
C08110437-013	BC-GVH-2	51-72	24	24	SCL	0.31	5	1.7	
C08110437-014	BC-GVH-2	72-84	16	16	SL	0.21	5	0.6	
C08110437-015	BC-GVH-3	0-4	22	22	SIL	1.2	20	5.9	
C08110437-016	BC-GVH-3	4-17	26	26	SCL	0.51	13	1.6	
C08110437-017	BC-GVH-3	17-30	18	18	SL	0.26	7	0.7	
C08110437-018	BC-GVH-3	30-57	20	20	SL SCL	0.23	5	0.3	
C08110437-019	BC-GVH-3	57-90	22	22	SCL	0.21	<5	0.5	



## QA/QC Summary Report

Client: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH

Report Date: 12/26/08  
Work Order: C08110437

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASA15-5									Batch: 20594
Sample ID: C08110437-019ADUP	Sample Duplicate					Run: PSA_081121A			11/21/08 10:28
Sand	58.0	%	1.0				0	20	
Silt	20.0	%	1.0				0	20	
Clay	22.0	%	1.0				0	20	
Sample ID: LCS-20594	Laboratory Control Sample					Run: PSA_081121A			11/21/08 10:28
Sand	94.0	%	1.0	97	85	115			
Method: ASA29-3									Batch: 20648
Sample ID: MBLK-1	Method Blank					Run: HACH DR3000_081124A			11/24/08 06:43
Organic Carbon, Total (TOC)	0.09	%	0.02						
Organic Matter, Total (TOM)	0.2	%	0.03						
Sample ID: LCS-2	Laboratory Control Sample					Run: HACH DR3000_081124A			11/24/08 06:43
Organic Carbon, Total (TOC)	1.5	%	0.10	98	70	120			
Organic Matter, Total (TOM)	2.6	%	0.17	95	70	120			
Sample ID: C08110437-004ADUP	Sample Duplicate					Run: HACH DR3000_081124A			11/24/08 06:45
Organic Carbon, Total (TOC)	0.90	%	0.10				5.4	20	
Organic Matter, Total (TOM)	1.6	%	0.17				5.4	20	
Method: ASA29-3									Batch: 20649
Sample ID: C08110712-004ADUP	Sample Duplicate					Run: HACH DR3000_081124A			11/24/08 06:48
Organic Carbon, Total (TOC)	0.40	%	0.10				2.5	20	
Organic Matter, Total (TOM)	0.69	%	0.17				2.5	20	
Sample ID: MBLK-44	Method Blank					Run: HACH DR3000_081124A			11/24/08 06:48
Organic Carbon, Total (TOC)	0.06	%	0.02						
Organic Matter, Total (TOM)	0.1	%	0.03						
Sample ID: LCS-45	Laboratory Control Sample					Run: HACH DR3000_081124A			11/24/08 06:48
Organic Carbon, Total (TOC)	1.5	%	0.10	98	70	120			
Organic Matter, Total (TOM)	2.6	%	0.17	95	70	120			
Method: ASAM10-3									Batch: 20583
Sample ID: LCS-20583	Laboratory Control Sample					Run: COND1-C_081119A			11/19/08 12:59
Conductivity, paste extract	3.48	mmhos/cm	0.010	112	70	130			
Sample ID: C08110437-004ADUP	Sample Duplicate					Run: COND1-C_081119A			11/19/08 13:06
Conductivity, paste extract	0.345	mmhos/cm	0.010				0	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Client: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH

Report Date: 12/26/08  
Work Order: C08110437

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: ASAM10-3									Batch: 20584
Sample ID: LCS-20584	Laboratory Control Sample					Run: COND1-C_081119B			11/19/08 13:08
Conductivity, paste extract	2.69	mmhos/cm	0.010	87	70	130			
Sample ID: C08110437-019ADUP	Sample Duplicate					Run: COND1-C_081119B			11/19/08 13:14
Conductivity, paste extract	0.202	mmhos/cm	0.010				0.5		20
Method: ASAM10-3.2									Batch: 20583
Sample ID: LCS-20583	Laboratory Control Sample					Run: COND1-C_081119A			11/19/08 12:59
pH, sat. paste	2.2	s.u.	0.10	93	80	120			
Sample ID: C08110437-004ADUP	Sample Duplicate					Run: COND1-C_081119A			11/19/08 13:06
pH, sat. paste	8.7	s.u.	0.10				0.2		20
Method: ASAM10-3.2									Batch: 20584
Sample ID: LCS-20584	Laboratory Control Sample					Run: COND1-C_081119B			11/19/08 13:08
pH, sat. paste	2.3	s.u.	0.10	100	80	120			
Sample ID: C08110437-019ADUP	Sample Duplicate					Run: COND1-C_081119B			11/19/08 13:14
pH, sat. paste	8.6	s.u.	0.10				0.1		20
Method: E353.2									Batch: 20573
Sample ID: MB-20573	Method Blank					Run: TECHNICON_081125A			11/25/08 12:43
Nitrogen, Nitrate+Nitrite as N	0.9	mg/kg-dry	0.3						
Sample ID: LCS-20573	Laboratory Control Sample					Run: TECHNICON_081125A			11/25/08 12:45
Nitrogen, Nitrate+Nitrite as N	21.8	mg/kg-dry	1.0	125	75	125			
Sample ID: C08110437-019AMS	Sample Matrix Spike					Run: TECHNICON_081125A			11/25/08 13:40
Nitrogen, Nitrate+Nitrite as N	20.9	mg/kg-dry	1.0	120	80	120			
Sample ID: C08110437-019AMSD	Sample Matrix Spike					Run: TECHNICON_081125A			11/25/08 13:43
Nitrogen, Nitrate+Nitrite as N	21.0	mg/kg-dry	1.0	121	80	120			S
Method: SW6010B									Batch: 20576
Sample ID: MB-20576	Method Blank					Run: ICP2-C_081203A			12/03/08 15:12
Phosphorus	3	mg/kg-dry	1						
Sample ID: LCS-20576	Laboratory Control Sample					Run: ICP2-C_081203A			12/03/08 15:16
Phosphorus	39.1	mg/kg-dry	5.0	146	70	130			S
Sample ID: C08110437-019ADUP	Sample Duplicate					Run: ICP2-C_081203A			12/03/08 17:45
Phosphorus	ND	mg/kg-dry	28	-19			0		20 S

### Qualifiers:

RL - Analyte reporting limit.

ND Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



## QA/QC Summary Report

Client: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH

Report Date: 12/26/08  
Work Order: C08110437

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Batch: 20577
Sample ID: MB-20577	Method Blank					Run: ICPMS4-C_081202A			12/02/08 17:37
Potassium	2	mg/kg	0.10						
Sample ID: LCS-20577	Laboratory Control Sample					Run: ICPMS4-C_081202A			12/02/08 17:43
Potassium	59	mg/kg	10	30	50	150			S
Sample ID: C08110437-019ADUP	Sample Duplicate					Run: ICPMS4-C_081202A			12/02/08 22:52
Potassium	81	mg/kg	10				5.8	20	
Method: SW6020									Batch: 20583
Sample ID: MB-20583	Method Blank					Run: ICPMS4-C_081129A			11/29/08 13:44
Calcium	ND	mg/L	0.006						
Magnesium	0.004	mg/L	0.0005						
Potassium	0.01	mg/L	0.010						
Sodium	0.02	mg/L	0.006						
Sample ID: LCS-20583	Laboratory Control Sample					Run: ICPMS4-C_081129A			11/29/08 13:50
Calcium	58.7	mg/L	1.0	117	85	115			S
Magnesium	53.2	mg/L	1.0	106	85	115			
Potassium	55.4	mg/L	1.0	111	85	115			
Sodium	53.9	mg/L	1.0	108	85	115			
Sample ID: C08110437-004ADUP	Sample Duplicate					Run: ICPMS4-C_081129A			11/29/08 17:14
Calcium	38.7	mg/L	1.0				2	30	
Magnesium	10.2	mg/L	1.0				1.8	30	
Potassium	8.56	mg/L	1.0				2.2	30	
Sodium	9.39	mg/L	1.0				0.3	30	

### Qualifiers:

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ND - Not detected at the reporting limit.





## QA/QC Summary Report

Client: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH

Report Date: 12/26/08  
Work Order: C08110437

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
							Batch: 20584		
Method: SW6020									
Sample ID: MB-20584	Method Blank		Run: ICPMS4-C_081201A				12/01/08 20:23		
Calcium	0.01	mg/L	0.006						
Magnesium	0.002	mg/L	0.0005						
Potassium	0.02	mg/L	0.010						
Sodium	0.006	mg/L	0.006						
Sample ID: LCS-20584	Laboratory Control Sample		Run: ICPMS4-C_081201A				12/01/08 20:30		
Calcium	43.3	mg/L	1.0	86	85	115			
Magnesium	41.4	mg/L	1.0	83	85	115	S		
Potassium	42.7	mg/L	1.0	85	85	115			
Sodium	42.0	mg/L	1.0	84	85	115	S		
Sample ID: C08110437-005AMS4	Sample Matrix Spike		Run: ICPMS4-C_081201A				12/01/08 20:44		
Calcium	50.4	mg/L	1.0	97	75	125			
Magnesium	25.2	mg/L	1.0	101	75	125			
Potassium	19.8	mg/L	1.0	106	75	125			
Sodium	15.7	mg/L	1.0	102	75	125			
Sample ID: C08110437-005AMSD4	Sample Matrix Spike Duplicate		Run: ICPMS4-C_081201A				12/01/08 20:51		
Calcium	50.5	mg/L	1.0	98	75	125	0.2	20	
Magnesium	25.7	mg/L	1.0	105	75	125	2.1	20	
Potassium	19.9	mg/L	1.0	106	75	125	0.3	20	
Sodium	16.2	mg/L	1.0	105	75	125	2.7	20	
Sample ID: C08110437-019ADUP	Sample Duplicate		Run: ICPMS4-C_081201A				12/01/08 23:34		
Calcium	32.7	mg/L	1.0				0.8	30	
Magnesium	4.88	mg/L	1.0				1.2	30	
Potassium	3.01	mg/L	1.0				2.5	30	
Sodium	5.54	mg/L	1.0				0.7	30	
							Batch: 20619		
Method: USDA23c									
Sample ID: LCS-20619	Laboratory Control Sample		Run: ORION 3 STAR PH_081120B				11/20/08 13:01		
Lime as CaCO3	2.70	%	0.10	108	70	120			
Sample ID: MB-20619	Method Blank		Run: ORION 3 STAR PH_081120B				11/20/08 13:01		
Lime as CaCO3	ND	%	0.1						
Sample ID: C08110437-019ADUP	Sample Duplicate		Run: ORION 3 STAR PH_081120B				11/20/08 13:44		
Lime as CaCO3	18.2	%	0.10				6	20	

### Qualifiers:

RL Analyte reporting limit.

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Client: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH

Report Date: 12/26/08  
Work Order: C08110437

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA27a									Batch: R111193
Sample ID: LCS-20583	Laboratory Control Sample					Run: SARTORIUS_081119A			11/18/08 10:21
Saturation Percentage	50.6	%	0.10	101	80	120			
Sample ID: C08110437-004ADUP	Sample Duplicate					Run: SARTORIUS_081119A			11/18/08 10:25
Saturation Percentage	25.2	%	0.10				2	20	
Method: USDA27a									Batch: R111195
Sample ID: LCS-20584	Laboratory Control Sample					Run: SARTORIUS_081118E			11/18/08 10:27
Saturation Percentage	50.1	%	0.10	100	80	120			
Sample ID: C08110437-019ADUP	Sample Duplicate					Run: SARTORIUS_081118E			11/18/08 10:30
Saturation Percentage	24.1	%	0.10				6	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



CLIENT: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH  
Sample Delivery Group: C08110437

Date: 26-Dec-08

## CASE NARRATIVE

### Key to Texture Results:

C = Clay  
SiC = Silty Clay  
SiCL = Silty Clay Loam  
SC = Sandy Clay  
SCL = Sandy Clay Loam  
CL = Clay Loam  
Si = Silt  
SiL = Silt Loam  
L = Loam  
S = Sand  
LS = Loamy Sand  
SL = Sandy Loam

### ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

### SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

### GROSS ALPHA ANALYSIS

Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

### SOIL/SOLID SAMPLES

All samples reported on an as received basis unless otherwise indicated.

### ATRAZINE, SIMAZINE AND PCB ANALYSIS USING EPA 505

Data for Atrazine and Simazine are reported from EPA 525.2, not from EPA 505. Data reported by ELI using EPA method 505 reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

### SUBCONTRACTING ANALYSIS

Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

### BRANCH LABORATORY LOCATIONS

eli-b - Energy Laboratories, Inc. - Billings, MT  
eli-g - Energy Laboratories, Inc. - Gillette, WY  
eli-h - Energy Laboratories, Inc. - Helena, MT  
eli-r - Energy Laboratories, Inc. - Rapid City, SD  
eli-t - Energy Laboratories, Inc. - College Station, TX

### CERTIFICATIONS:

USEPA: WY00002; FL-DOH NELAC: E87641; California: 02118CA  
Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

### ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER, WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting [www.energylab.com](http://www.energylab.com)

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page [www.energylab.com](http://www.energylab.com).

THIS IS THE FINAL PAGE OF THE LABORATORY ANALYTICAL REPORT



## QA/QC Summary Report

Client: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH

Report Date: 12/26/08  
Work Order: C08110437

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020							Batch: 20584		
Sample ID: MB-20584	Method Blank		Run: ICPMS4-C_081201A				12/01/08 20:23		
Calcium	0.01	mg/L	0.006						
Magnesium	0.002	mg/L	0.0005						
Potassium	0.02	mg/L	0.010						
Sodium	0.006	mg/L	0.006						
Sample ID: LCS-20584	Laboratory Control Sample		Run: ICPMS4-C_081201A				12/01/08 20:30		
Calcium	43.3	mg/L	1.0	86	85	115			
Magnesium	41.4	mg/L	1.0	83	85	115			S
Potassium	42.7	mg/L	1.0	85	85	115			
Sodium	42.0	mg/L	1.0	84	85	115			S
Sample ID: C08110437-005AMS4	Sample Matrix Spike		Run: ICPMS4-C_081201A				12/01/08 20:44		
Calcium	50.4	mg/L	1.0	97	75	125			
Magnesium	25.2	mg/L	1.0	101	75	125			
Potassium	19.8	mg/L	1.0	106	75	125			
Sodium	15.7	mg/L	1.0	102	75	125			
Sample ID: C08110437-005AMSD4	Sample Matrix Spike Duplicate		Run: ICPMS4-C_081201A				12/01/08 20:51		
Calcium	50.5	mg/L	1.0	98	75	125	0.2	20	
Magnesium	25.7	mg/L	1.0	105	75	125	2.1	20	
Potassium	19.9	mg/L	1.0	106	75	125	0.3	20	
Sodium	16.2	mg/L	1.0	105	75	125	2.7	20	
Sample ID: C08110437-019ADUP	Sample Duplicate		Run: ICPMS4-C_081201A				12/01/08 23:34		
Calcium	32.7	mg/L	1.0				0.8	30	
Magnesium	4.88	mg/L	1.0				1.2	30	
Potassium	3.01	mg/L	1.0				2.5	30	
Sodium	5.54	mg/L	1.0				0.7	30	
Method: USDA23c							Batch: 20619		
Sample ID: LCS-20619	Laboratory Control Sample		Run: ORION 3 STAR PH_081120B				11/20/08 13:01		
Lime as CaCO3	2.70	%	0.10	108	70	120			
Sample ID: MB-20619	Method Blank		Run: ORION 3 STAR PH_081120B				11/20/08 13:01		
Lime as CaCO3	ND	%	0.1						
Sample ID: C08110437-019ADUP	Sample Duplicate		Run: ORION 3 STAR PH_081120B				11/20/08 13:44		
Lime as CaCO3	18.2	%	0.10				6	20	

### Qualifiers:

RL Analyte reporting limit.

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Client: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH

Report Date: 12/26/08  
Work Order: C08110437

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA27a									Batch: R111193
Sample ID: LCS-20583	Laboratory Control Sample					Run: SARTORIUS_081119A			11/18/08 10:21
Saturation Percentage	50.6	%	0.10	101	80	120			
Sample ID: C08110437-004ADUP	Sample Duplicate					Run: SARTORIUS_081119A			11/18/08 10:25
Saturation Percentage	25.2	%	0.10				2	20	
Method: USDA27a									Batch: R111195
Sample ID: LCS-20584	Laboratory Control Sample					Run: SARTORIUS_081118E			11/18/08 10:27
Saturation Percentage	50.1	%	0.10	100	80	120			
Sample ID: C08110437-019ADUP	Sample Duplicate					Run: SARTORIUS_081118E			11/18/08 10:30
Saturation Percentage	24.1	%	0.10				6	20	

### Qualifiers:

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CLIENT: Long Resource Consultants Inc  
Project: Westridge - Bear Canyon GVH  
Sample Delivery Group: C08110437

Date: 26-Dec-08

## CASE NARRATIVE

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SiCL = Silty Clay Loam  
SC = Sandy Clay  
SCL = Sandy Clay Loam  
CL = Clay Loam  
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SiL = Silt Loam  
L = Loam  
S = Sand  
LS = Loamy Sand  
SL = Sandy Loam

### ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

### SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

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Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

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### ATRAZINE, SIMAZINE AND PCB ANALYSIS USING EPA 505

Data for Atrazine and Simazine are reported from EPA 525.2, not from EPA 505. Data reported by ELI using EPA method 505 reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

### SUBCONTRACTING ANALYSIS

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eli-g - Energy Laboratories, Inc. - Gillette, WY  
eli-h - Energy Laboratories, Inc. - Helena, MT  
eli-r - Energy Laboratories, Inc. - Rapid City, SD  
eli-t - Energy Laboratories, Inc. - College Station, TX

### CERTIFICATIONS:

USEPA: WY00002; FL-DOH NELAC: E87641; California: 02118CA  
Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

### ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

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